UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,319	04/03/2007	Anthony L. Smith	032968-0133	2135

22428 7590 02/17/2010
FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
CHAU, TERRY C	

ART UNIT	PAPER NUMBER
3655	

MAIL DATE	DELIVERY MODE
02/17/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/594,319	SMITH ET AL.	
	Examiner	Art Unit	
	TERRY CHAU	3655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *1* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-48* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *International Search Report for PCT/US05/11346*.

DETAILED ACTION

Election/Restrictions

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

The following groups are from the International Search Report. A copy of the International Search Report is attached to this Election/Restriction.

Group I, claim(s) 1, 2-4, drawn to the labyrinth seal path formed between the housing insert and the first cover.
Group II, claim(s) 5-11, drawn to the coil assembly.
Group III, claim(s) 12-15, 16, 41-48, drawn to the rotor and/or slot design.
Group IV, claim(s) 17-19, 20-22, drawn to the sealing configuration.
Group V, claim(s) 23-24, drawn to the surface coating.
Group VI, claim(s) 25-28, drawn to the bearing configuration.
Group VII, claim(s) 35-37, drawn to the wall design.
Group VIII, claim(s) 38-40, drawn to cooling.

The inventions listed do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The prior art has been identified as:
DI : US 6585092 B1

Invention I:

From a comparison of the disclosure of this prior art Dl and the technical features of claims I and 2, the features which are known from Dl (see especially Fig. 1 and paragraphs 18-32) are the following:

Claims 1 (incl. implicit features) and 2:
A viscous fluid clutch (1 O), comprising:
an input shaft (12);
a rotor assembly (1 8) connected to the input shaft;
an annular housing insert (42);
a coil assembly (44) operatively connected to the housing insert;
a housing including a first housing portion (40) cast around the housing insert and a second housing portion (31) connected for rotation with the first housing portion and rotatably disposed on the input shaft; and
a fluid reservoir disposed between the first housing portion and the second housing portion.

From which analysis follows that the following technical features of claims 1 and 2 can be seen to make a contribution over this prior art (Special Technical Features (STF), (Rule 13.2 PCT)): the first housing portion and the housing insert form there between a labyrinth seal having a first end and a second end wherein each of the first end and the second end of the labyrinth path communicate with the fluid reservoir such that any fluid entering the labyrinth seal is returned to the fluid reservoir.

From these STF the objective problem to be solved by the 1st invention can be construed as: fluid leakage between the first housing portion that is cast around the housing insert.

Invention II:

From a comparison of the disclosure of this prior art and the technical features of claim 5 there cannot be found any features that can be seen to make a contribution over this prior art (Special Technical Features (STF), (Rule 13.2 PCT)):

Invention III:

From a comparison of the disclosure of this prior art and the technical features of claims 12, 16 and 41 the following features can be seen to make a contribution over this prior art (Special Technical Features (STF), (Rule 13.2 PCT)):

Claim 12:
at least one of the radially outer surface of the rotor ring, the radially inner surface of the rotor ring, the radially outer surface of the slot, and the radially inner surface of the slot is roughened.

Claim 16:
a grooved portion disposed between the first and second portions and including a rectangular groove extending radially inwardly from the radially outer edge of the rotor

ring; wherein the radially inner edge of the grooved portion is flush with the radially inner edge of the first portion and the radially inner edge of the second portion; and

wherein the first and second portions of the rotor each have a thickness sufficiently greater than a thickness of the grooved portion such that a magnetic flux path in the fluid clutch will have a substantial portion of a magnetic field flow around the grooved portion as compared to a portion of the magnetic field flow that flows through the grooved portion.

Claim 41 :

the radially outer surface of the rotor ring is spaced apart from the radially outer surface of the slot by a first distance and the radially inner surface of the rotor ring is spaced apart from the radially inner surface of the slot by the first distance.

From these, the objective problem to be solved can be construed as: packing of the particles of the magnetorheological fluid on certain (unwanted) parts, i.e. reduced shear efficiency.

Invention IV:

From a comparison of the disclosure of this prior art and the technical features of claims 17 and 20 the following features can be seen to make a contribution over this prior art (Special Technical Features (STF), (Rule 13.2 PCT)):

Claim 17:

a seal compressed between the coil body and the housing insert; wherein the coil cover is coupled to the housing insert; and wherein the coil cover contacts a portion of the coil body proximate the seal to substantially prevent the coil body from deflecting under the force applied to the coil body by the compressed seal.

Claim 20:

a seal disposed within the annular groove; and a rotor assembly disposed between
the first housing portion and the second housing portion and coupled to the input shaft;

wherein when the first housing portion is coupled to the second housing portion, the first radially extending surface makes line-to-line contact with the second radially extending surface and the seal is compressed between the first axially extending surface and the second axially extending surface.

From these, the objective problem to be solved can be construed as: leakage between parts that are sealed off by a sealing material.

Invention V:

From a comparison of the disclosure of this prior art and the technical features of claim 23 the following features can be seen to make a contribution over this prior art (Special Technical Features (STF), (Rule 13.2 PCT)):

Claim 23:
an annular housing insert having a first surface coated with a Cu/Al latent exoergic coating;
wherein the latent exoergic coating on the annular housing increases the adhesion between the housing insert and the first housing portion and resists separation of the first housing portion and the housing insert.

From these, the objective problem to be solved can be construed as: separation of interconnected parts.

Invention VI:
From a comparison of the disclosure of this prior art and the technical features of claims 25, 29 and 34 the following features can be seen to make a contribution over this prior art (Special Technical Features (STF), (Rule 13.2 PCT)):

Claim 25:
A bearing configured to be coupled to a housing of a fluid clutch and to an input shaft to allow the housing to rotate relative to the input shaft, the bearing comprising:
an outer race configured to be coupled to the housing; an inner race configured to be coupled to the input shaft; roller elements disposed between the outer race and the inner race for permitting the outer race to rotate relative to the inner race;
a first seal extending between a first side of the outer race and a first side of the inner race; and
a second seal extending between a second side of the outer race and a second side of the inner race;
wherein each of the first seal and the second seal include a substantially rigid core surrounded by a fluoroelastomer.

Claim 29:
a bearing pressed into the recess of the first housing portion and coupled to the input shaft, the bearing including a first side facing the reservoir and a second side facing the opposite direction; and
a generally L-shaped seal coupled to the first housing portion so that a first leg of the seal extends radially outwardly adjacent the first side of the bearing and a second leg of the seal extends axially inwardly adjacent the axially extending portion of the rotor hub toward the radially extending portion of the rotor hub, the distal end of the second leg of the seal extending into a recess provided in the radially extending portion of the hub;
wherein the seal, the recess in the radially extending portion of the rotor hub, and the axially extending portion of the rotor hub form there between a labyrinth at least partially protecting the bearing from the fluid in the reservoir.

Claim 34:

a bearing pressed into the recess of the first housing portion and coupled to the input shaft, the bearing including: an outer race coupled within the recess of the first housing portion; an inner race coupled to the input shaft;

roller elements disposed between the outer race and the inner race for permitting the outer race to rotate relative to the inner race; a first seal extending between the outer race and the inner race on a first, internally facing side of the bearing; and a second seal extending between the outer race and the inner race on a second, externally facing side of the bearing;

wherein the projection extending from the axially extending portion of the rotor hub contacts the inner race of the bearing and prevents the rotor hub from becoming close enough to the bearing to contact the first seal or the outer race of the bearing.

From these, the objective problem to be solved can be construed as: premature wear in the bearing assembly parts.

Invention VII:

From a comparison of the disclosure of this prior art and the technical features of claim 35 the following features can be seen to make a contribution over this prior art (Special Technical Features (STF), (Rule 13.2 PCT)):

Claim 35:

a radially extending wall portion located approximately the same radial distance from the axis as the rotor ring and spanning at least the same radial distance as the rotor ring; an angled wall portion extending radially inwardly and axially outwardly from the radially extending wall portion; and wherein the radially extending wall portion and the angled wall portion cooperate to reduce the amount of fluid needed to fill the fluid reservoir.

From these, the objective problem to be solved can be construed as: high costs (excess amount of fluid to fill the fluid reservoir).

Invention VIII:

From a comparison of the disclosure of this prior art and the technical features of claim 38 the following features can be seen to make a contribution over this prior art (Special Technical Features (STF), (Rule 13.2 PCT)):

Claim 38:

a brush box operatively coupled to the coil assembly;

wherein the first housing portion includes radially extending cooling fins each having a first end proximate the brush box and a second end proximate the outer periphery of the fluid clutch; and wherein the extension of the cooling fins to the proximity of the brush box transfers heat away from the area of the clutch proximate the brush box.

From these, the objective problem to be solved can be construed as: overheating leading to reduced lifetime.

The above analysis shows that the special technical features of invention I (claims 1-4) are neither the same as nor corresponding to those of invention II (claims 11), neither the same as nor corresponding to those of invention III (claims 12-16, 41-48), neither the same as nor corresponding to those of invention IV (claims 17-22), neither the same as nor corresponding to those of invention V (claims 23-24), neither the same as nor corresponding to those of invention VI (claims 25-34), neither the same as nor corresponding to those of invention VII (claims 35-37), nor the same as or corresponding to those of invention VIII (claims 38-40).

In conclusion, therefore, the 8 groups of claims are not linked by common or corresponding special technical features and define 8 different inventions not linked by a single general inventive concept.

The application, hence does not meet the requirements of Unity of Invention as defined in Rules 13.1 & 13.2 PCT.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim

remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TERRY CHAU whose telephone number is (571)270-5926. The examiner can normally be reached on Monday-Friday 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Le can be reached on 571-272-7092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TERRY CHAU/
Examiner, Art Unit 3655

/David D. Le/
Primary Examiner, Art Unit 3655
02/11/2010